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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/779,854	02/09/2001	Francis Geeraert	1076.39608X00	5432

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EXAMINER

LELE, TANMAY S

ART UNIT	PAPER NUMBER
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2684

DATE MAILED: 09/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/779,854

Applicant(s)

GEERAERT ET AL.

Examiner

Tanmay S Lele

Art Unit

2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 February 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to because in Figure 10, a line is listed with no number (at antenna feed point). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 17 is rejected under 35 U.S.C. 102(e) as being anticipated by Matsuyoshi et al. (Matsuyoshi, US Patent No. 6,549,169).

Regarding claim 17, Matsuyoshi teaches of a balanced antenna for a portable communications device (Figures 2 and 3 and column 6, lines 39 – 41), comprising a ground plane and first and second substantially similar antenna elements spaced from the ground plane, the first and second elements being substantially parallel to the ground plane (Figure 3A and starting column 7, line 44 and ending column 8, line 2) and being aligned in opposite directions with respect to one another (Figure 5).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 –4, 7 –10, and 12 – 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pierro et al (Pierro, US Patent No. 5,614,863) in view of Matsuyoshi et al. (Matsuyoshi, US Patent No. 6,549,169).

Regarding claim 1, Pierro teaches of a balanced antenna for connecting to a balanced power amplifier stage (Figure 2 and column 2, lines 23 – 28), the balanced power amplifier stage having first and second outputs (Figure 2 and starting column 7, lines 64 and ending column 8, line 9), and each of the antenna elements has a feed point connectable to one of the outputs from the power amplifier stage (Figure 2 and starting column 7, lines 64 and ending column 8, line 9).

Pierro does not specifically teach of in a portable communications device or the antenna comprising a ground plane and first and second antenna elements spaced apart from each other and from the ground plane, wherein the antenna elements are arranged to be opposite one another.

In a related art dealing with balanced antennas, Matsuyoshi teaches of a portable communications device (Figures 2 and 3 and column 6, lines 39 – 41) and the antenna comprising a ground plane (column 7, lines 64 – 65) and first and second antenna elements spaced apart from each other and from the ground plane (Figure 3A and starting column 7, line 44 and ending

Art Unit: 2684

column 8, line 2), wherein the antenna elements are arranged to be opposite one another (Figure 5).

It would have been obvious to one skilled in the art at the time of invention to have included into Pierro's balanced amplifier and antenna structure, Matsuyoshi's mobile antenna, for the purposes of accommodating a miniature form factor and mitigating radiation patterns due to human body effects, as taught by Matsuyoshi.

Regarding claim 2, Pierro in view of Matsuyoshi, teach all the claimed limitations as recited in claim 1. Matsuyoshi further teaches of wherein the elements are substantially identical and one element is reversed with respect to the other so that the radiation patterns superpose (Figure 5; note that due to orientation the patterns would superimpose).

Regarding claim 3, Pierro in view of Matsuyoshi, teach all the claimed limitations as recited in claim 1. Matsuyoshi further teaches of wherein the feed points of the antenna elements are arranged at opposite sides of the antenna arrangement (Figure 14 and column 14, lines 24 – 36).

Regarding claim 4, Pierro in view of Matsuyoshi, teach all the claimed limitations as recited in claim 1. Matsuyoshi further teaches of wherein the first and second antenna elements comprise conductive plates (column 9, lines 34 – 38).

Regarding claim 7, Pierro in view of Matsuyoshi teach all the claimed limitations as recited in claim 1. Matsuyoshi further teaches of wherein the space between the antenna elements comprises air (Figure 3A and column 7, lines 43 – 50).

Art Unit: 2684

Regarding claim 8, Pierro in view of Matsuyoshi teach all the claimed limitations as recited in claim 1. Matsuyoshi further teaches of wherein the antenna elements are substantially parallel to the ground plane (Figure 5).

Regarding claim 9, Pierro in view of Matsuyoshi teach all the claimed limitations as recited in claim 8. Matsuyoshi further teaches of wherein the space between the antenna elements comprises a dielectric material (Figure 14 and column 14, lines 7 – 14).

Regarding claim 10, Pierro in view of Matsuyoshi teach all the claimed limitations as recited in claim 9. Matsuyoshi further teaches of wherein the dielectric material has a high dielectric constant (starting column 13, line 65 and ending column 14, line 7).

Regarding claim 12, Pierro in view of Matsuyoshi, teach all the claimed limitations as recited in claim 1. Matsuyoshi further teaches of further comprising a floating ground between the ground plane and the antenna elements (column 4, lines 16 – 26).

Regarding claim 13, Pierro in view of Matsuyoshi, teach all the claimed limitations as recited in claim 12. Matsuyoshi further teaches of wherein the floating ground comprises a conductive plate which is electrically isolated from the ground plane (column 4, lines 16 – 26).

Regarding claim 14, Pierro in view of Matsuyoshi, teach all the claimed limitations as recited in claim 13. Matsuyoshi further teaches of wherein the conductive plate is spaced apart from the ground plane by a dielectric support (column 4, lines 16 – 26).

Regarding claim 15, Pierro in view of Matsuyoshi teach all the claimed limitations as recited in claim 1. Matsuyoshi further teaches of a mobile telephone including a balanced antenna (Figures 2 and 3 and column 6, lines 39 – 41 and Figure 3A and starting column 7, line 44 and ending column 8, line 2).

Art Unit: 2684

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pierro et al (Pierro, US Patent No. 5,614,863) in view of Matsuyoshi et al. (Matsuyoshi, US Patent No. 6,549,169). as applied to claim 1 above, and further in view of Sanford et al. (Sanford, US Patent No. 6,424,300).

Regarding claim 5, Pierro in view of Matsuyoshi teach all the claimed limitations as recited in claim 1. Pierro in view of Matsuyoshi do not specifically teach of wherein the portable communications device includes a printed circuit board and the ground plane comprises the printed circuit board (though it should be noted that most mobiles are constructed as such).

In a related art dealing with mobile communications and antenna fabrication, Sanford teaches of wherein the portable communications device includes a printed circuit board (column 3, lines 21 – 27) and the ground plane comprises the printed circuit board (column 3, lines 21 – 27).

It would have been obvious to one skilled in the art at the time of invention to have included into Pierro and Matsuyoshi's communication terminal, Sanford's PCB, for the purposes of housing RF circuitry in order to compact manner, as taught by Sanford.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pierro et al (Pierro, US Patent No. 5,614,863) in view of Matsuyoshi et al. (Matsuyoshi, US Patent No. 6,549,169). as applied to claim 1 above, and further in view of Hu et al. (Hu, US Patent No. 6,492,952).

Regarding claim 6, Pierro in view of Matsuyoshi, teach all the claimed limitations as recited in claim 1. Pierro in view of Matsuyoshi do not specifically teach of wherein the antenna elements are substantially perpendicular to the ground plane.

Art Unit: 2684

In a related art dealing with mobile communications and antenna orientation, Hu teaches of wherein the antenna elements are substantially perpendicular to the ground plane (starting column 3, line 67 and ending column 4, line 5).

It would have been obvious to one skilled in the art at the time of invention to have included into Pierro and Matsuyoshi's mobile, Hu's antenna positioning, for the purposes of conforming to the form housing while still providing full functionality, as taught by Hu.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pierro et al (Pierro, US Patent No. 5,614,863) in view of Matsuyoshi et al. (Matsuyoshi, US Patent No. 6,549,169).

as applied to claim 1 above, and further in view of Thiel et al. (Thiel, US Patent No. 6,288,682).

Regarding claim 11, Pierro in view of Matsuyoshi, teach all the claimed limitations as recited in claim 10. Pierro in view of Matsuyoshi do not specifically teach of wherein the dielectric constant is greater than about 8 (though Matsuyoshi does teach of antennas arranged on dielectrics in starting column 13, line 65 and ending column 14, line 7).

In a related art dealing with antenna fabrication on dielectrics, Thiel teaches of wherein the dielectric constant is greater than about 8 (starting column 7, line 66 and ending column 8, line 4).

It would have been obvious to one skilled in the art at the time of invention to have included into Pierro and Matsuyoshi's mobile, Thiel's dielectric material, for the purposes of manufacturing a high capacitance value within the physically small volumes present in mobile devices, as taught by Thiel.

Art Unit: 2684

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuyoshi et al. (Matsuyoshi, US Patent No. 6,549,169) in view of Sanford et al. (Sanford, US Patent No. 6,424,300).

Regarding claim 16, Matsuyoshi teaches of a portable communications device (Figures 2 and 3 and column 6, lines 39 – 41) comprising a balanced antenna (Figure 3A and starting column 7, line 44 and ending column 8, line 2), the balanced antenna comprising first and second substantially parallel antenna elements mounted to the board, each of the antenna elements having a top edge and a bottom edge, the bottom edge being nearer the board than the top edge (Figure 3A and starting column 7, line 44 and ending column 8, line 2), the device further comprising a ground plane disposed between the bottom edge of the antenna elements and the board, the ground plane being electrically isolated from the antenna elements and the board (column 4, lines 16 – 29).

Matsuyoshi does not specifically teach of a circuit board having a plurality of electronic components mounted thereon.

In a related art dealing with mobile communications and antenna fabrication, Sanford teaches of a circuit board having a plurality of electronic components mounted thereon (column 3, lines 21 – 27).

It would have been obvious to one skilled in the art at the time of invention to have included into Pierro and Matsuyoshi's communication terminal, Sanford's PCB, for the purposes of housing RF circuitry in order to compact manner, as taught by Sanford.

Art Unit: 2684

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pierro et al (Pierro, US Patent No. 5,614,863) in view of Matsuyoshi et al. (Matsuyoshi, US Patent No. 6,549,169) and in further view of Yanagisawa et al (Yanagisawa, US Patent No. 6,130,651).

Regarding claim 18, Pierro teaches of a balanced antenna for connecting to a balanced power amplifier stage (Figure 2 and column 2, lines 23 – 28), the balanced power amplifier stage having first and second outputs (Figure 2 and starting column 7, lines 64 and ending column 8, line 9), and each of the antenna elements has a feed point connectable to one of the outputs from the power amplifier stage (Figure 2 and starting column 7, lines 64 and ending column 8, line 9).

Pierro does not specifically teach of in a portable communications device or the antenna comprising a ground plane and first and second antenna elements spaced apart from each other and from the ground plane, wherein the antenna elements are arranged to be opposite one another or of to overlap to a predetermined extent, and the method comprising varying the extent to which the antenna elements overlap to tune the antenna for use in a predetermined frequency band.

In a related art dealing with balanced antennas, Matsuyoshi teaches of a portable communications device (Figures 2 and 3 and column 6, lines 39 – 41) and the antenna comprising a ground plane (column 7, lines 64 – 65) and first and second antenna elements spaced apart from each other and from the ground plane (Figure 3A and starting column 7, line 44 and ending column 8, line 2), wherein the antenna elements are arranged to be opposite one another (Figure 5).

Art Unit: 2684

It would have been obvious to one skilled in the art at the time of invention to have included into Pierro's balanced amplifier and antenna structure, Matsuyoshi's mobile antenna, for the purposes of accommodating a miniature form factor and mitigating radiation patterns due to human body effects, as taught by Matsuyoshi.

Pierro in view of Matsuyoshi do not specifically teach of to overlap to a predetermined extent, and the method comprising varying the extent to which the antenna elements overlap to tune the antenna for use in a predetermined frequency band.

In related art dealing with antennas and tuning, Yanagisawa teaches of overlap to a predetermined extent, and the method comprising varying the extent to which the antenna elements overlap to tune the antenna for use in a predetermined frequency band (column 3, lines 12 – 25).

It would have been obvious to one skilled in the art at the time of invention to have included into Pierro and Matsuyoshi's mobile, Yanagisawa's overlap, for the purposes of tuning the mobile the desired band of interest while conforming to the size of the housing, as taught by Yanagisawa.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tanmay S Lele whose telephone number is (703) 305-3462. The examiner can normally be reached on 9 - 6:30 PM Monday – Thursdays and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay A. Maung can be reached on (703) 308-7745. The fax phone numbers for the

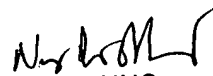
Art Unit: 2684

organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

↖
Tanmay S Lele
Examiner
Art Unit 2684

tsl
August 27, 2003


NAY MAUNG
PRIMARY EXAMINER